

Title (en)

Process for reduction of orientation-dependent oxidation in trench structures and semiconductor memory device produced thereby

Title (de)

Verfahren zur Reduzierung von orientierungsabhängiger Oxidation in Grabenstrukturen und davon hergestelltes Halbleiterspeicherbauelement

Title (fr)

Procédé de réduction d'oxydation dépendante de l'orientation dans des structures à tranchée et dispositif de mémoire à semiconducteur produit avec ce procédé

Publication

EP 1150349 A3 20060802 (EN)

Application

EP 01110324 A 20010426

Priority

US 56008100 A 20000427

Abstract (en)

[origin: EP1150349A2] A process for forming an oxide layer on a sidewall of a trench in a substrate. The process comprises the steps of forming the trench in the substrate, forming a nitride interface layer over a portion of the trench sidewall, forming an amorphous layer over the nitride interface layer, and oxidizing the amorphous layer to form the oxide layer. The process may be used, for example, to form a gate oxide for a vertical transistor, or an isolation collar. The invention also comprises a semiconductor memory device comprising a substrate, a trench in the substrate having a sidewall, an isolation collar comprising an isolation collar oxide layer on the trench sidewall in an upper region of the trench, and a vertical gate oxide comprising a gate oxide layer located on the trench sidewall above the isolation collar. The isolation collar oxide layer is disposed over an isolation collar nitride interface layer between the isolation collar oxide layer and the trench sidewall, the gate oxide layer is disposed over a gate nitride interface layer between the gate oxide layer and the trench sidewall, or both.

IPC 8 full level

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CPC (source: EP US)

H10B 12/053 (2023.02 - EP US); **H10B 12/0383** (2023.02 - EP US)

Citation (search report)

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- [Y] EP 0860870 A2 19980826 - IBM [US]
- [A] EP 0644591 A1 19950322 - TOSHIBA KK [JP]
- [Y] PATENT ABSTRACTS OF JAPAN vol. 014, no. 142 (E - 0904) 16 March 1990 (1990-03-16)
- [A] PATENT ABSTRACTS OF JAPAN vol. 013, no. 292 (E - 782) 6 July 1989 (1989-07-06)

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US6674113B2; WO0195391A1

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